

REMARKS

Applicant thanks the Examiner for the very thorough consideration given the present application. In view of the above amendment, applicant believes the pending application is in condition for allowance.

Claims 1, 2 and 4-18 are now present in this application. Claims 1, 8 and 16-18 are independent. Claims 16-18 have been added, claims 1, 2, 4, and 8-14 have been amended and claim 3 and 7 has been canceled. Reconsideration of this application, as amended, is respectfully requested.

Allowable Subject Matter

The Examiner states that claims 4, 13 and 14 would be allowable if rewritten in independent form. Applicant thanks the Examiner for the early indication of allowable subject matter in this application. In light of this indication, claims 4, 13 and 4 have been rewritten in independent form as new claims 16-18.

Priority Under 35 U.S.C. § 119

Applicant thanks the Examiner for acknowledging Applicant's claim for foreign priority under 35 U.S.C. § 119, and receipt of the certified priority document.

Claim Objections

The Examiner has objected to claims 1, 7 and 9 because of several informalities. In order to overcome this objection, Applicant has amended claims 1, 7 and 9 in order to correct the deficiencies pointed out by the Examiner. Reconsideration and withdrawal of this objection are respectfully requested.

Obviousness-Type Double Patenting Rejection

Claim 1 stands provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of a copending U.S. Patent Application

No. 10/743,493. Applicant respectfully submits it is premature to address the provisional double patenting rejection as neither of the claim sets in question has been indicated as containing allowable subject matter.

Rejection Under 35 U.S.C. § 102

Claims 1 and 7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by De Bruyne. Claims 2 and 8-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over De Bruyne. Claims 3, 5-6, 12 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over De Bruyne in view of Passey. Further, claim 1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim et al. These rejections are respectfully traversed.

Amended independent claim 1 includes a combination of features and is directed to a method for detecting a position of a mobile robot, including calculating time taken for each ultrasonic signal generated by a plurality of ultrasonic signal oscillating units of a charging station to reach the mobile robot, calculating a distance between the charging station and the mobile robot based on the calculated reaching time, and calculating an angle between the charging station and the mobile robot based on the calculated distance value and a preset distance value between the plurality of ultrasonic signal oscillating units. Independent claim 1 further recites that the ultrasound signal is generated based on a point of time at which a radio frequency (RF) signal is emitted from the mobile robot and the RF signal is emitted at preset time intervals such that the ultrasound signal is being generated at the preset time intervals. Amended independent claim 8 includes similar features in a varying scope.

These features are supported at least by FIGs. 1-3. For example, time taken for each ultrasonic signal generated by a plurality of ultrasonic signal oscillating units 3 and 4 of a charging station to reach the mobile robot is calculated (see FIG. 1 and step S5 of FIG. 2). Further, a distance between the charging station and the mobile robot is calculated based on the calculated reaching time (S6), and an angle between the charging station and the mobile robot is calculated based on the calculated distance value and a preset distance value between the plurality of ultrasonic signal oscillating units (S8). In this instance, the ultrasound signal is generated based on a point of time at which an RF signal is emitted from the mobile robot and the RF signal is emitted at preset time

intervals (S1-S2) such that the ultrasound signal is being generated at the preset time intervals (see S3).

De Bruyne teaches two fixed ultrasound transmitters and an ultrasound receiver which is mounted on a computer mouse to calculate the coordinates of the ultrasound receiver from the ultrasound signals and an infrared signal receiver to trigger transmission of the ultrasound pulses. However, De Bruyne fails to teach or suggest that an RF (or infrared) signal is emitted at preset time intervals such that the ultrasound signal is being generated at the preset time intervals. Further, although the Office Action states that the combination of De Bruyne and Passey teaches the RF signal being emitted at preset time intervals, the ultrasound signals are not transmitted based on a point of time at which a signal is emitted. This differs from the present invention in which the ultrasound signal is generated in response to the RF signal being emitted. Rather, both the RF signal and the ultrasound signal in Passey are triggered by a pulse generator. Therefore, De Bruyne, even when combined with Passey, fails to teach or suggest the features in the independent claims.

Further, Kim et al. includes one inventor that is the inventor of this application (Se-Wan Kim) and both Kim et al. and the present invention are commonly assigned to LG Electronics (as evidenced by the Assignment and papers filed in both applications). Further, Kim et al. is valid only as a 35 U.S.C. § 102(e) reference and therefore cannot be used in a U.S.C. § 103(a) rejection. Further, the claimed priority document of the present invention has a filing date before Kim et al., and thus an English translation of the claimed priority document can also be filed to remove Kim et al. as a reference.

Accordingly, it is respectfully submitted that amended independent claims 1, 7 and 8, and each of the claims depending therefrom are allowable.

Further, it is respectfully submitted the other 35 U.S.C. § 103(a) rejections have also been overcome as the claims rejected therein are dependent claims and the additional applied references also do not teach or suggest the features recited in the independent claim.

Claims Added

Claims 16-18 have been added to include the allowable subject matter in an independent form. Applicants respectfully submit the new claims are fully supported by the originally filed application. It is respectfully submitted the new claims further define over the applied art.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.


If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Jun S. Ha, Registration No. 58,508, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By 
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